Pranav Minasandra, Ph.D.

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Interests

Novel and generally applicable theories of behaviour in animals; methods to explore behavioural dynamics. I am particularly interested in the dynamics of behaviour at the intersection of multiple timescales, and the *behavioural algorithms* used by animals to express individual, collective, and social behaviour.

Employment

Max Planck Institute of Animal Behaviour, Konstanz, Germany — 2024 - now
Postdoctoral researcher; IMPRS-QBEE Postdoc Awardee.

Education

Max Planck Institute of Animal Behaviour, Konstanz, Germany — 2020 - 2024
PhD [Dr. rer nat] *magna cum laude* - International Max Planck Research School of Quantitative Behaviour, Ecology, and Evolution. Thesis: *"Exploring sequences of behaviour across scales and species."*

Indian Institute of Science (IISc), Bengaluru, India — 2015 - 2020
- Master of Science in Biology
- Bachelor of Science (Research) in Biology

Publications

Peer-reviewed publications

1. Gall, G. E. C., Demartsev, V., **Minasandra**, **P.**, Baldoni, C., Cain, K. & Quinn, J. S. Examining combinatoriality within the pūkeko vocal repertoire. *Animal Behaviour* (2025, in press).
2. **Minasandra**, **P.**, Grout, E. M., Brock, K., Crofoot, M. C., Demartsev, V., Gersick, A. S., Hirsch, B. T., Holekamp, K. E., Johnson-Ulrich, L., Nayak, A., *et al.* Behavioral sequences across multiple animal species in the wild share common structural features. *PNAS* **122.** e2503962122. doi:10.1073/pnas.2503962122 (2025). [Press coverage].
3. DeNicola, V., Mezzini, S., Bursac, P., **Minasandra**, **P.** & Cagnacci, F. Effects of vasectomy on breeding-related movement and activity in free-ranging white-tailed deer. *Movement Ecology.* doi:10.1186/s40462-025-00554-5 (2025).
4. Grout, E. M., Ortega, J., **Minasandra**, **P.**, Quin, M. J., Crofoot, M. C., Strandburg-Peshkin, A. & Hirsch, B. T. Whole Group Tracking Reveals That Relatedness Drives Consistent Subgrouping Patterns in White-Nosed Coatis. *Animal Behaviour* **216.** 175–193. ISSN: 0003-3472. doi:10.1016/j.anbehav.2024.08.010 (2024).
5. **Minasandra**, **P.**, Jensen, F. H., Gersick, A. S., Holekamp, K. E., Strauss, E. D. & Strandburg-Peshkin, A. Accelerometer-based predictions of behaviour elucidate factors affecting the daily activity patterns of spotted hyenas. *Royal Society Open Science* **10.** 230750. doi:10.1098/rsos.230750 (2023).
6. Kunjar, S., Strandburg-Peshkin, A., Giese, H., **Minasandra**, **P.**, Sarkar, S., Jolly, M. K. & Gradwohl, N. Link updating strategies influence consensus decisions as a function of the direction of communication. *Royal Society Open Science* **10.** 230215. doi:10.1098/rsos.230215.
7. **Minasandra**, **P.** & Isvaran, K. Truncated power-law distribution of group sizes in antelope. *Behaviour* **157.** 541–558. doi:10.1163/1568539X-bja10012 (2020).

Pre-prints and work in-prep

8. **Minasandra**, **P.** Anticipating others' future behaviours alters collective movement and enhances survival. *biorxiv* **122.** 2025–08. doi:10.1101/2025.08.14.670290 (2025). [pre-print].
9. **Minasandra**, **P.**, Planas-Sitjà, I., Roche, D. & Sridhar, V. H. TracktorLive: a real-time multi-object tracking and response delivery package. [Software available on GitHub].
10. **Minasandra**, **P.**, Demartsev, V., Johnson-Ulrich, L., Manser, M. & Strandburg-Peshkin, A. Spatiotemporal interplay of vigilance, movement, and collective behaviour in groups of meerkats. [Ch. 3 of Dissertation, available online].
11. Grout, E. M., Hass, C. C., **Minasandra**, **P.**, Thomas, M., Ashbury, A. M., Ortega, J., Crofoot, M. C., Hirsch, B. T. & Strandburg-Peshkin, A. The vocal repertoire of white-nosed coatis: structural features, temporal dynamics, and social variations.

Awards and fellowships

University of Konstanz—Best Paper Award — 2025
Chosen from among several nominations. [200 €]

IMPRS Postdoctoral Award — 2024-2025
6 months of pay at the scale of a postdoctoral researcher. [32,350 €]

ISBE Travel Award — 2024
2500 AUD [≈1,500 €].

DAAD - Graduate Student Scholarship Programme — 2020 - 2024
Nominated after evaluation of my proposal. [≈60,000€]

Kishore Vaigyanik Protsahan Yojana — 2015 - 2020
Govt. of India scholarship for exceptional undergraduates in science. *All India Rank : 135*
Included stipend and contingency

Mentorship

Amlan Nayak
Master's thesis: Spatial variation of vigilance in meerkats.

Ananya Passi
Summer research: Mathematical modelling of habitat use and population dynamics.

Teaching

Introduction to Git
Instructor and organiser: Biannual workshop offered at the MPI of Animal Behavior.

Introduction to remote code servers like GitHub
Instructor and organiser: Biannual workshop offered at the MPI of Animal Behavior.

LaTeX for academic documents
Instructor and organiser: Annual workshop offered at the MPI of Animal Behavior.

Quantitative Ecology: Research Design and Inference — 2019
Teaching assistant: Taught coding in R, conducted several classes, graded assignments, managed course website.

Talks and posters

[Invited] CES Seminar Series — 2024
Indian Institute of Science, Bangalore
"Exploring sequences of behaviour in the wild across scales and species"

International Society of Behavioural Ecology Meeting — 2024
Melbourne, Australia
"Sequences of behaviour show a common statistical structure across species"

Gesselschaft für Primatologie Annual Conference — 2024
Konstanz, Germany

"How animals behave: Sequences of behavior show a common statistical structure across species"

Descriptive & Normative Models of Collective Behaviour 2022
School of Mathematics, University of Leeds
"Looking into hyena daily activity patterns using accelerometers"

Animal Behaviour Society - Virtual Seminar 2021 2021
"Behavioural classifier provides insights into spotted hyena behaviour"

Technical skills

Programming languages and related
Python, Julia, R, Bash, LaTeX, and C. HTML, CSS, and git.

Specialised computational skills
Machine learning; Parallel processing and Inter-Process Communication; Agent-based models; Analysis of complex multivariate time-series data.

Mathematical modelling
Dynamical (PDE) models incorporating spatial and stochastic variables; Probability models; Numerical simulations of all the above.

Other academic services

Reviewing
PLOS One; Integrative and Comparative Biology; Animal Behaviour.

Representation 2024 - 2025
Postdoc representative at the Max Planck Institute of Animal Behaviour.

References

Dr Ariana Strandburg-Peshkin,
Max Planck Institute of Animal Behavior
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Dr Kavita Isvaran,
Indian Institute of Science
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Dr Andrew Berdahl,
University of Washington
berdahl@uw.edu

Prof Meg Crofoot,
Max Planck Institute of Animal Behavior
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